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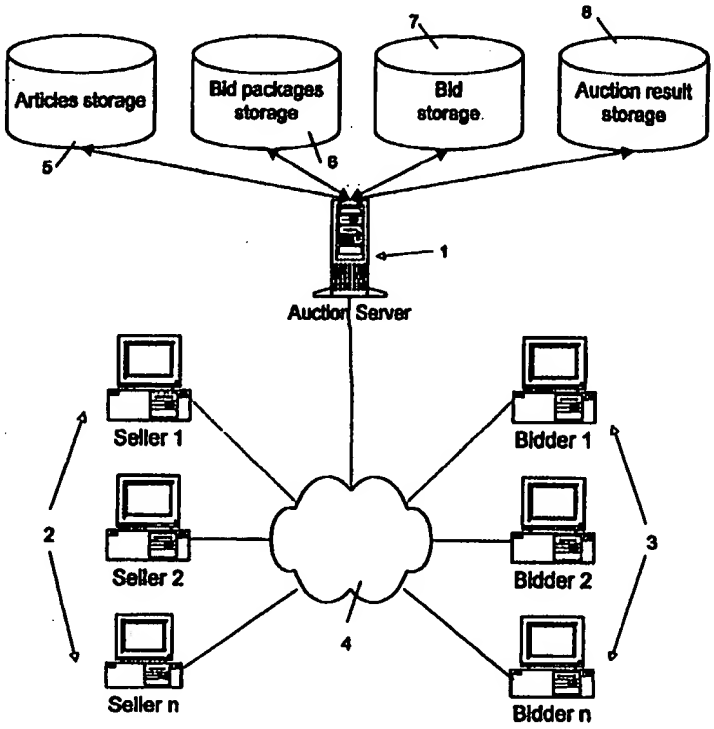
(57) Abstract

The invention relates to a method of holding auctions which take place in a computer environment, where a plurality of sellers (8) and bidders (3) may submit bids from local computers to a central computer (1), a so–called server which may e.g. be coupled via the Internet. The server (1) may offer a catalogue (5) to the indivudual bidders (3) who can then prepare, via their own computers, a prioritized list of the articles which they may possibly desire to buy. The auctioning system incorporates the certainty, via a list of purchase conditions, that a bidder does not risk buying too many articles, or that he will not spend too much money, in the same manner as is known from a traditional live auction. It is moreover noted that the auctioning system may be combined with an ordinary live auction. The auctioning form gives a very advantageous price formation which considers both sellers' and buyers' interests. Furthermore, the auction may take place entirely without geographical limitations.



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A method of holding an auction and uses of the method

The invention relates to a method of holding an auction of a plurality of articles in a computer environment, said auction being controlled by a central computer.

EP 0 793 382 A2 and US Patent No. 4 789 928, e.g., disclose an auctioning concept where buyers can bid for an article from a computer in the same manner as is done at a traditional auction. Thus, only one article is put up for sale at a time, which means of course that the auctioning process may take a good deal of time if a large number of articles is to be auctioned.

Furthermore, the known auctioning concepts have the drawback that individuals wanting to bid at the auction must be present at the same time, which, of course, is a drawback of an individual e.g. from Japan wants to bid via his computer at the same time as an individual residing in the United States.

Accordingly, an object of the invention is to provide an auctioning form of the type mentioned in the opening paragraph which allows the auction to be conducted independently of geographical conditions. Another object is that the articles for sale need not be auctioned in a specific order.

The object of the invention is achieved by comprising the steps of:

a) opening the auction for a given period of time for a plurality of bidders during which period of time the bidders may prepare a plurality of bid packages containing a prioritized list with purchase conditions

for the articles for which it is desired to place bids later,

b) holding the actual auction, which is performed by the central computer which checks whether the bids stated in the bid packages prepared by the bidders in step a), may be placed, and if yes, then placing the bid,

c) closing the auction after all bids have been processed in the central computer, a list of the articles acquired by the individual bidder being prepared in the central computer.

Bids may hereby be placed from any geographical location, if only the period of time during which bids may be placed has been suitably selected. The bidders need not be physically present either in this auctioning form. The actual auction is thus conducted by means of the computer alone.

When, as stated in claim 2, the bid packages are prepared by means of an auction catalogue which is received from the central computer, a survey of the articles for sale may be distributed in an extremely expedient manner to a very large segment of potential buyers no matter where they are present.

To optimize the auctioning form additionally, it is expedient, as stated in claim 3, that the actual auction of the articles stored in the central computer is conducted with the following steps:

a) first the central computer checks whether the first bid package contains bids which fulfil the purchase

conditions and may thereby be placed for some of the articles,

and if some of the bids fulfil the purchase conditions, these bids are placed and stored,

b) step a) is repeated for all bid packages placed or being placed.

This provides the advantage in particular that the price formation is optimized completely for buyers and sellers, which may be illustrated in the following way.

If a first bidder has made a prioritized list of e.g. five bids, but only wants to buy two, and he e.g. places a bid for article three which is later outbid by another bidder, then the first bidder can buy a later article without breaking his purchase condition specifying max. two articles. In short, the auction proceeds in the manner that each time a bid is placed, all bidders' purchase conditions are run through for all the articles for sale.

To make the auctioning additionally flexible, it is expedient, as stated in claim 4, that the central computer checks in connection with the placing of bids that all purchase conditions for the placing of bids are fulfilled before bids are possibly placed.

This primarily ensures that a bidder does not risk buying too many articles, or perhaps even buys more than he can afford.

When, as stated in claim 5, the bid packages contain a prioritized list of the order of the articles in which it is desired to place bids, the bidders may have the best

conceivable distribution of the articles which they want to buy.

It is a further advantage, as stated in claim 6, that the bid packages contain terms which are related to external conditions.

These terms may e.g. be that a bid may be placed only if an external condition has been fulfilled, which might e.g. be that a bank is to undertake to finance the purchase before a bid is placed.

To make the auctioning form even more flexible, it is an advantage, as stated in claim 7, that the actual auction is held in connection with a live auction, so that when one or more bidders place a bid for an article, the steps defined in claim 3 for each bidding will be executed by the central computer.

The auction may thus proceed like a traditional auction, but with the central computer in control of the auction, as a bid placed from e.g. a saleroom will cause all the steps concerning purchase conditions to be run as if it was a pure computer auction. This will thus mean that as soon as a bid is placed from the saleroom for an article, all bid packages previously placed will be run through and checked for purchase conditions. As a consequence, changes may be made in the composition of which articles are acquired by which buyers.

In the event that one or more bidders have bid the same price and it is the highest bid, the central computer selects the bid package placed first as being the one that is to apply. This provides a "just" way of selling the articles in the event that all bid conditions are the same.

To ensure that the bidder does not feel that he places too high bids for some articles, it is an advantage, as stated in claim 9, that the auctioned articles are sold to the bidder who has placed the highest bid, but at a price which is lower, e.g. the second highest bid.

As mentioned, the invention also relates to uses of the method.

These uses are defined in claims 10 and 11, it being noted in particular that executing the auction on the Internet will be extremely suitable.

The invention will now be explained more fully with reference to an embodiment shown in the drawing, in which

fig. 1 shows a block diagram of conducting an auction in a computer environment,

fig. 2 shows a flow chart of the individual steps performed in connection with the computer auction,

fig. 3 shows the principle of the actual working method in the computer,

fig. 4 shows an additional routine in connection with the execution of the auction in the computer,

fig. 5 shows a diagram corresponding to the one in fig. 3, but now extended with a live auction,

fig. 6 shows how purchase conditions for a number of persons proceed, and

fig. 7 shows an additional example of how bids may be placed.

In fig. 1, the numeral 1 designates a central computer, a so-called auction server, from which the auction is controlled according to the invention. The central computer has data connections to a plurality of sellers 2 and a plurality of bidders 3.

As will be additionally seen from fig. 1, the central computer 1 has a catalogue storage 5 which contains information on the articles to be auctioned. Also included are a bid packages storage 6 containing information on the possible bids of each individual bidder, a bid storage 7 for submitting bids to the central computer, and a storage 8 for storing and submitting the auction results.

Fig. 2 shows the three phases in which the auction takes place. The three phases are separated by dashed lines in the figure.

At the top, the numeral 10 designates that the auctioning of each article may be started in the blocks 11, 12 and 13. Moreover, between the upper two dashed lines it will be possible to prioritize a list of the articles which it is desired to buy, and to insert some purchase conditions. All this takes place during a given period of time, and when this has elapsed, the auction is closed, which is symbolized in the blocks 16, 17, 18 and 19.

Fig. 3 shows in more detail how the actual execution of the bid packages according to fig. 2, shown by the reference numeral 15, takes place. Each packet is input at 20, and for each package a bid is placed for the individual articles, shown at 21. It is decided at 22 whether the current article is to be auctioned. If yes, the purchase conditions are checked at 23, and if they are OK, a bid is placed. If they are not OK, no bid is placed, and the next article in the package goes through the same

process. If articles upon which no bids are placed in the bid package because the purchase conditions are not fulfilled, it is decided in the block 25 whether there are more bids in the bid package, following which the same process is repeated. As soon as all the bids in the bid package have been placed and processed, feedback will take place at 26 to implement processing of the next bid package. Once all bid packages and all bids have been submitted and processed, the auction wishes will have been computer processed, which is shown symbolically at 27.

Fig. 4 shows an example of a routine of how the execution of the auction proper proceeds. A bid is placed at 24a. It is checked at 28 whether it is the highest bid. If it is not the highest bid, the bid is not placed, and the process terminates at 32. If, on the other hand, it is the highest bid, it is checked at 29 whether the bid is higher than a possible minimum price. If it is not, the bid is not placed, and it is rejected and transferred for termination at 32. If the bid is higher than the minimum price, it will be stored at 30 as the highest bid, and then the process is terminated.

Also fig. 5 shows an auction process which has the same elements as in fig. 3 in several respects. At the block 39 where a bid for an article is placed. When this bid is placed, the computer places its bid. This process continues until either the computer or one of the live participants has placed the highest bid. It is noted that live participants do not know beforehand how high the computer will bid. When live bidding for the article is over, it is decided whether the computer bid or one of the live bids is highest, following which the auctioning of the article is completed. This means that, because of his purchase conditions, this bidder now has the possi-

bility to bid for a later article and to acquire it if this bid is higher.

An illustration of how the bidders may place bids with purchase conditions is shown in fig. 6, which shows three possible outcomes of the selection of three persons X, Y and Z at the reference numeral 43. As will be seen, person X has prioritized his bids such that he has selected the articles in the order C, A, B and D. It is noted that they are processed in alphabetical order in the computer, but with several runs, as explained before. As will be seen, X has placed a bid for C of DKK 20,000, and since this is the highest bid placed at the auction, he will buy the article, if no others place higher bids later. As a second priority he has selected a car of the make Ford Sierrra, and has bid 15,000, but since this is lower than a previously placed higher bid, nothing will be bought. Person X has selected an Opel Vectra as the third priority, and since he has bid the highest price here too, he will buy this article. Then a bid will never be placed for priority 4, since the bidder has had a condition of max. 2 articles, and since he has already bought 2, the bid 4 will never be placed.

A similar example is shown for person Y in fig. 6, from which it will be seen that this person has selected one article as a purchase condition, and has got a car of the make Opel Mantra as his third priority, since the bids for the two preceding priorities were not sufficiently high. Finally, fig. 6 shows that person Z just wants to buy one article, and as he got priority 1, bids will never be placed for his remaining articles.

Finally, fig. 7, like fig. 6, shows a little more sophisticated list of purchase conditions, an additional column including some extra conditions being shown at 58. The

principle in itself is the same as in fig. 6, but now includes the possibility that if the person does not succeed in buying anything, he will transfer his bids to another auction.

Clearly, the auction according to the invention may be used in many connections and with a very large number of bidders spread geographically anywhere in the world.

Examples of uses may be holding of automobile auctions, holding of food auctions, such as fish auctions, holding of flower auctions, fur auctions, works of art auctions, and options, etc. Even uses in connection with financial transactions are conceivable.

Patent Claims:

1. A method of holding an auction of a plurality of articles (7) in a computer environment, said auction being controlled by a central computer (1), characterized by comprising the steps of:

a) opening the auction for a given period of time for a plurality of bidders (3), during which period of time the bidders may prepare a plurality of bid packages containing a prioritized list with purchase conditions for the articles for which it is desired to place bids later,

b) holding the actual auction, which is performed by the central computer (1) which checks whether the bids stated in the bid packages prepared by the bidders (3) in step a) may be placed, and if yes, then placing the bid,

c) closing the auction after all bids have been processed in the central computer (1), a list (8) of the articles acquired by the individual bidder being prepared in the central computer.

2. A method according to claim 1, characterized in that the bid packages are prepared by means of an auction catalogue (5) which is received from the central computer (1).

3. A method according to claim 1 or 2, characterized in that the actual auction of the articles stored in the central computer is conducted with the following steps:

a) first the central computer (1) checks whether the first bid package contains bids which fulfil the purchase conditions and may thereby be placed for some of the articles (7),

and if some of the bids fulfil the purchase conditions, these bids are placed and stored,

b) step a) is repeated for all bid packages placed or being placed.

4. A method according to claims 1-3, c h a r a c t e r i z e d in that the central computer (1) checks in connection with the placing of bids whether all purchase conditions for the placing of bids are fulfilled before bids are possibly placed.

5. A method according to claims 1-4, c h a r a c t e r i z e d in that the bid packages contain a prioritized list (45) of the order of the articles in which it is desired to place bids.

6. A method according to claims 1-5, c h a r a c t e r i z e d in that the bid packages contain terms which are related to external conditions (58).

7. A method according to claims 1-6, c h a r a c t e r i z e d in that the actual auction is held in connection with a live auction (39) so that when one or more bidders place a bid for an article, then the steps of claim 3 for each bidding will be executed by the central computer.

8. A method according to any one of the preceding claims, c h a r a c t e r i z e d in that where one or more bidders have bid the same price and it is the high-

est bid, the central computer (1) selects the bid placed first.

9. A method according to any one of the preceding claims, c h a r a c t e r i z e d in that the auctioned articles are sold to the bidder who has the highest bid, but at price which is lower, e.g. the second highest bid.

10. Use of the method according to any one of claims 1-9 for executing auctions in a computer network, such as the Internet.

11. Use of the method according to any one of claims 1-9 for automobile auctions.

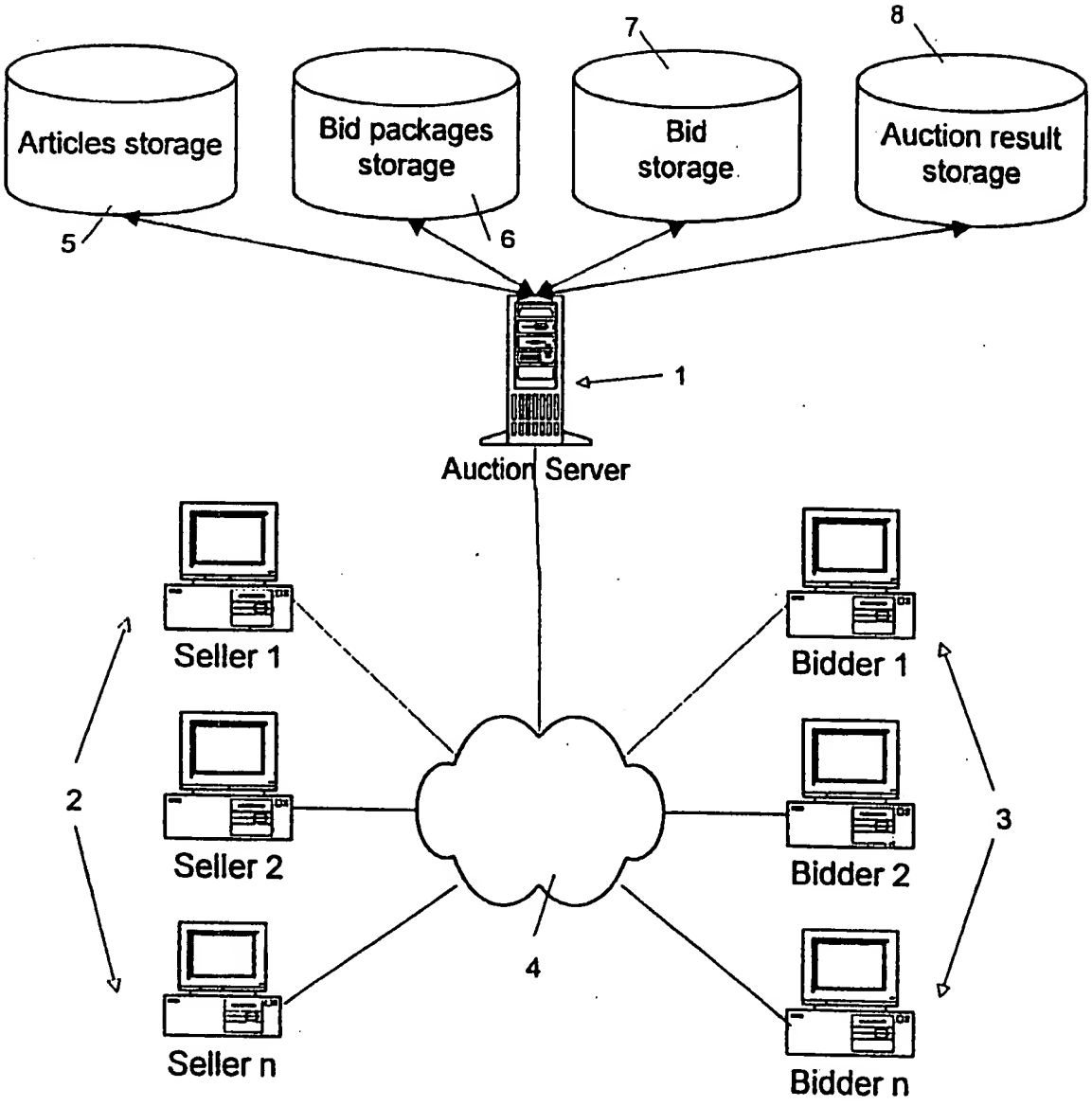
Articles storage
Bid packages storage
Bid storage
Auction result storage
5
6
7
8
1
Auction Server
Seller 1
Seller 2
Seller n
Bidder 1
Bidder 2
Bidder n
2
3
4

Fig. 1

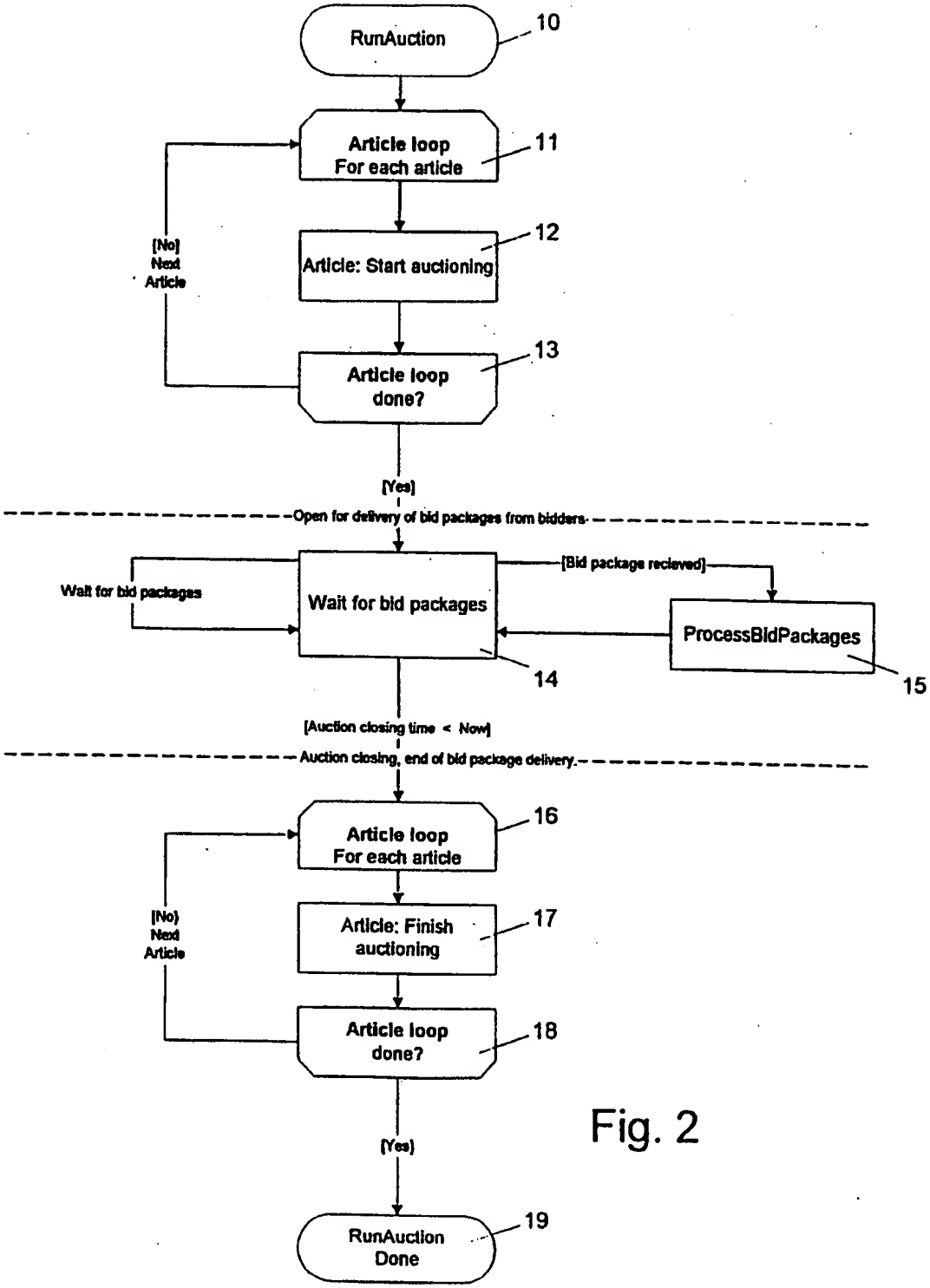
RunAuction
10
Article loop
For each article
11
[No]
Next
Article
Article: Start auctioning
12
Article loop
done?
13
[Yes]
Open for delivery of bid packages from bidders
Wait for bid packages
[Bid package recieved]
Wait for bid packages
ProcessBidPackages
14
15
[Auction closing time < Now]
Auction closing, end of bid package delivery
Article loop
For each article
16
[No]
Next
Article
Article: Finish
auctioning
17
Article loop
done?
18
[Yes]
RunAuction
Done
19

Fig. 2

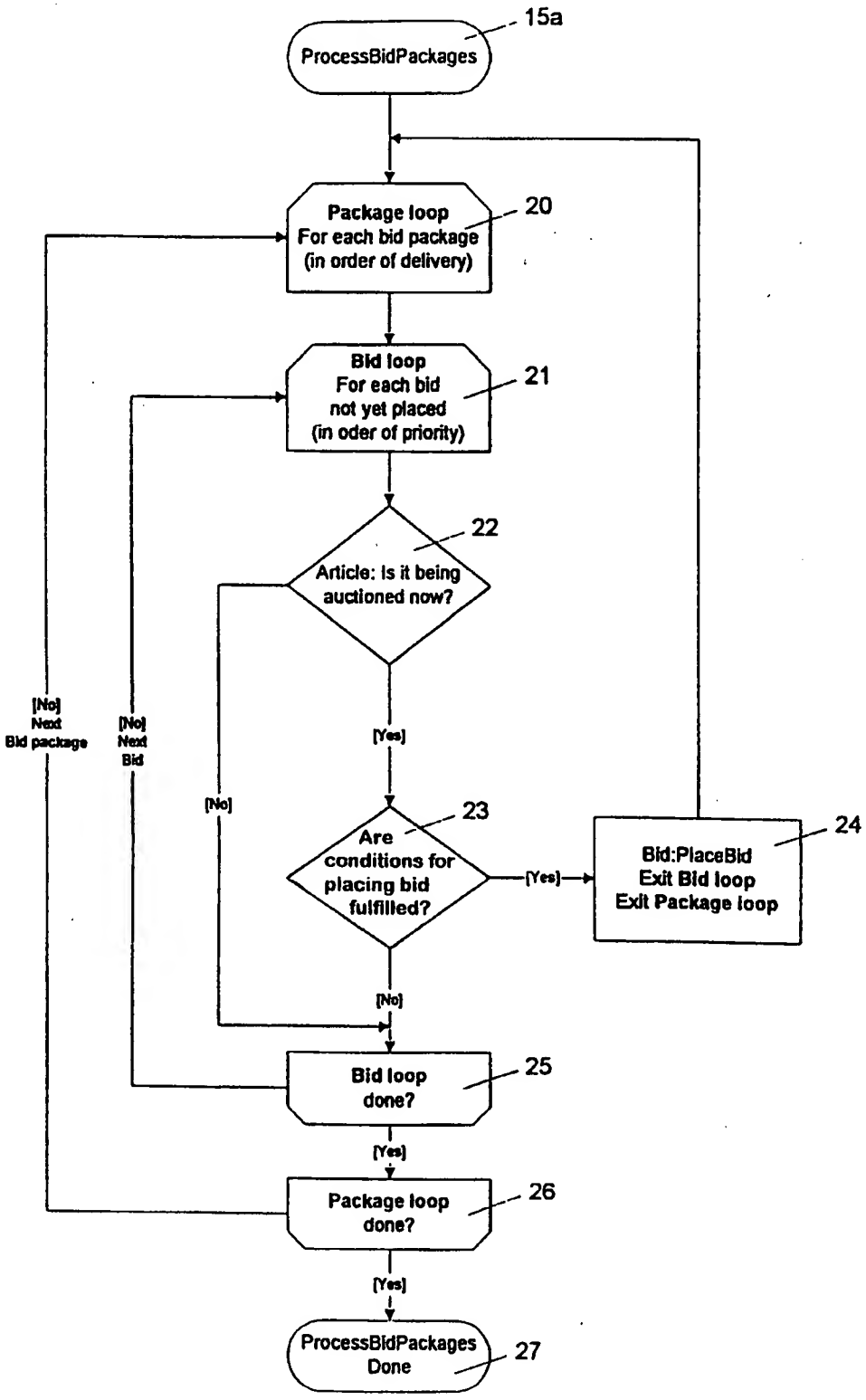
15a
ProcessBidPackages
Package loop
For each bid package
(in order of delivery)
20
Bid loop
For each bid
not yet placed
(in oder of priority)
21
22
Article: Is it being
auctioned now?
[No]
Next
Bid package
[No]
Next
Bid
[Yes]
[No]
23
Are
conditions for
placing bid
fulfilled?
[Yes]
24
Bid:PlaceBid
Exit Bid loop
Exit Package loop
[No]
Bid loop
done?
25
[Yes]
Package loop
done?
26
[Yes]
ProcessBidPackages
Done
27

Fig. 3

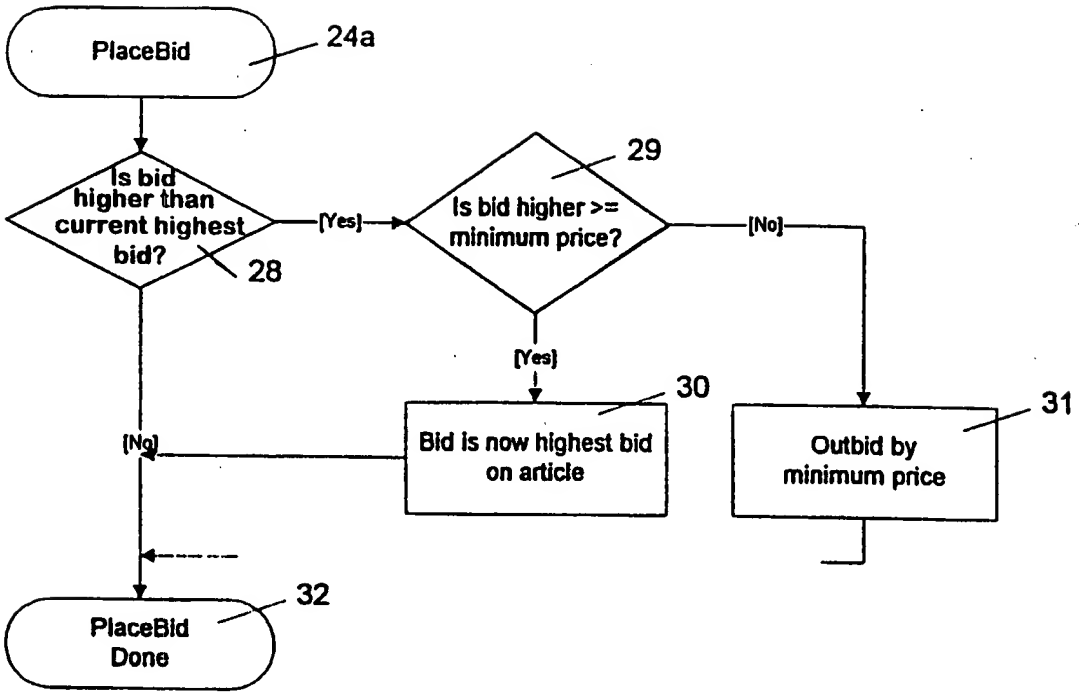
PlaceBid
24a
Is bid higher than current highest bid?
28
[Yes]
Is bid higher >= minimum price?
29
[No]
[Yes]
30
Bid is now highest bid on article
31
Outbid by minimum price
[No]
32
PlaceBid Done

Fig. 4

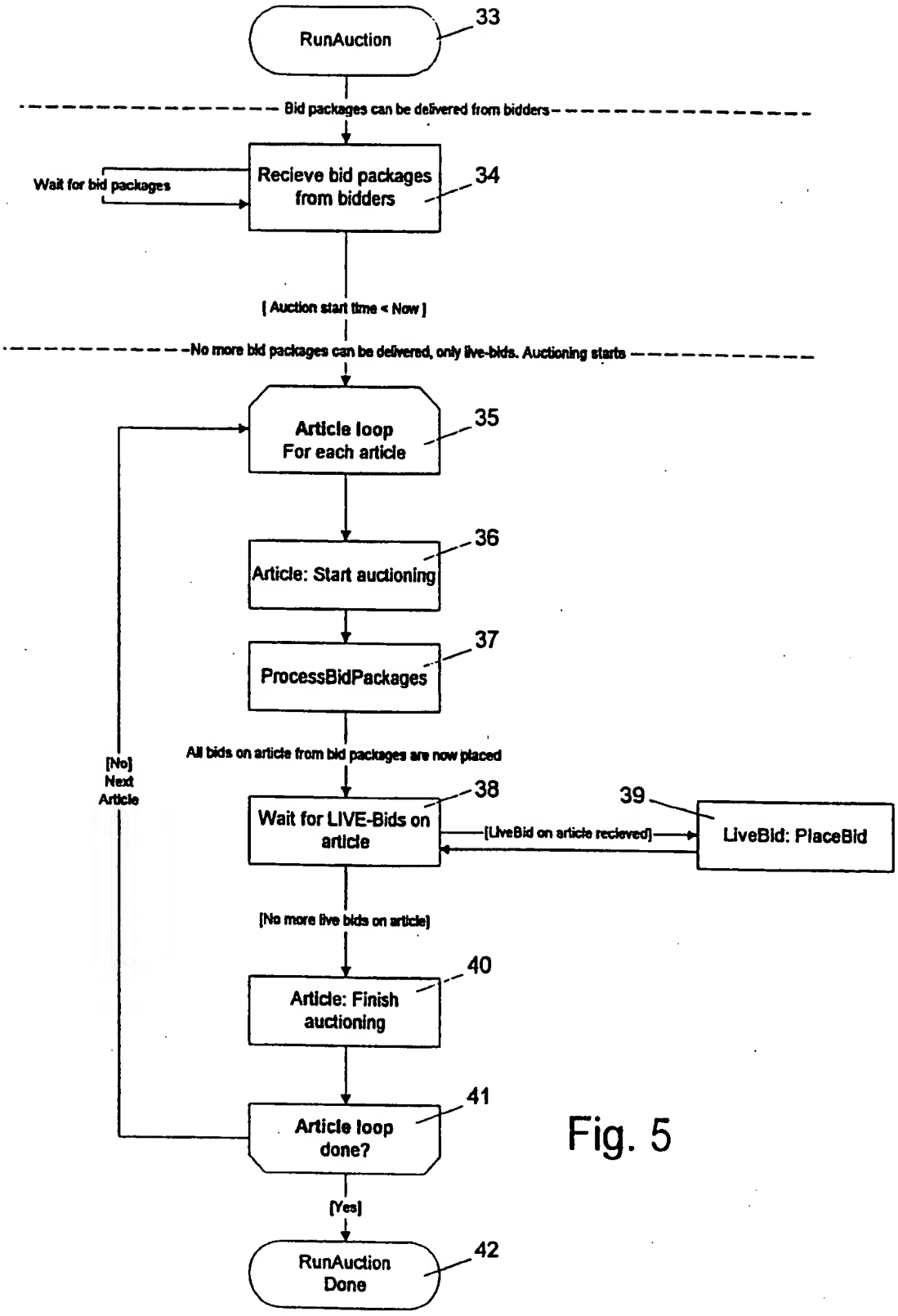
RunAuction
33
Bid packages can be delivered from bidders
Wait for bid packages
Recieve bid packages from bidders
34
[Auction start time < Now]
No more bid packages can be delivered, only live-bids. Auctioning starts
Article loop For each article
35
Article: Start auctioning
36
ProcessBidPackages
37
All bids on article from bid packages are now placed
[No] Next Article
Wait for LIVE-Bids on article
38
39
[LiveBid on article recieved]
LiveBid: PlaceBid
[No more live bids on article]
Article: Finish auctioning
40
Article loop done?
41
[Yes]
RunAuction Done
42

Fig. 5

43

44

Person X		Limitation : Buy max. 2 articles			
Priority	*Article*	*Description*	*Own bid*	*High bid*	*Order bid placed / Final result*
1	C	Ford Escort	20.000	20.000	1. Bid placed, article purchased
2	A	Ford Sierra	15.000	20.000	2. Bid placed, outbid
3	B	Opel Vectra	25.000	25.000	5. Bid placed, article purchased
4	D	Opel Manta	20.000		Bid never placed

45 46 47 48 49 50

Person Y		Limitation : Buy max. 1 article			
Priority	*Article*	*Description*	*Own bid*	*High bid*	*Order bid placed / Final result*
1	B	Opel Vectra	20.000	25.000	3. Bid placed, outbid
2	C	Ford Escort	15.000	20.000	6. Bid placed, too low
3	D	Opel Manta	25.000	25.000	7. Bid placed, article purchased
4	A	Ford Sierra	25.000		Bid never placed

Person Z		Limitation : Buy max. 1 article			
Priority	*Article*	*Description*	*Own bid*	*High bid*	*Order bid placed / Final result*
1	A	Ford Sierra	20.000	20.000	1. Bid placed, article purchased
2	D	Opel Manta	30.000		Bid never placed
3	B	Opel Vectra	30.000		Bid never placed
4	C	Ford Escort	25.000		Bid never placed

Fig. 6

51

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Person Z		Limitation : Buy max. 1 article			
Priority	*Article*	*Description*	*Own bid*	*Conditions for placing bid*	*External conditions for placing bid*
1	A	Ford Sierra	20.000	if not (Highest on A,C or D)	
2	D	Opel Manta	30.000	if not (Highest on A,B or D)	
3	B	Opel Vectra	30.000	if not (Highest on A,B or C)	
4	C	Ford Escort	25.000	if not (Highest on B,C or D)	If not(Bought Article X on auction Z)

53 54 55 56 57 58

Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 98/00040

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G06F 17/60, H04L 12/18 // G07C 11/00, G07C 15/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: G06F, H04L, G07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WIPO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 5640569 A (MARK S. MILLER ET AL), 17 June 1997 (17.06.97), claims 1-8, abstract --	1-11
A	FR 2733847 A1 (LE BRIS DENIS), 8 November 1996 (08.11.96), claims 1,11, abstract --	1-11
A	WO 9605563 A1 (REUTERS LIMITED), 22 February 1996 (22.02.96), abstract --	1-11
A	JP 7037015 A (OAK NET:KK), 7 February 1995 (07.02.95), abstract --	1-11

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 July 1998	17 -07- 1998
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Sylvain Dunand Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 98/00040

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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